REMARKS

The above amendments to the above-captioned application along with the following remarks are being submitted as a full and complete response to the Official Action dated February 18, 2005. In view of the above amendments and the following remarks, the Examiner is respectfully requested to give due reconsideration to this application, to indicate the allowability of the claims, and to pass this case to issue.

Status of the Claims

Claims 1-12 are under consideration in this application. Claims 1, 4 and 6 are being amended, as set forth in the above marked-up presentation of the claim amendments, in order to more particularly define and distinctly claim applicants' invention. New claims 8-12 are being added to recited other embodiments described in the specification.

The claims are being amended to correct formal errors and/or to better recite or describe the features of the present invention as claimed. All the amendments to the claims are supported by the specification. Applicants hereby submit that no new matter is being introduced into the application through the submission of this response.

Prior Art Rejections

Claims 1-7 were rejected under 35 U.S.C. § 102(e) as being unpatentable over U.S. Pat. No. 5,086,347 to Ukai et al. (hereinafter "Ukai"). This rejection has been carefully considered, but is most respectfully traversed.

The liquid crystal display device of the invention (e.g., Figs. 4 & 7), as now recited in independent claim 1, comprises: a liquid crystal LC; and two substrates SUB1, SUB2 opposed to each other with the liquid crystal LC interposed in between, the liquid crystal display device further comprising on a liquid-crystal-side surface of one of the two substrates: a plurality of gate signal lines GL; a plurality of drain signal lines DL that cross the plurality of gate signal lines GL; pixel regions each enclosed by two gate signal lines GL adjacent to each other and two drain signal lines DL adjacent to each other; a switching element that is provided in each pixel region and driven by a scanning signal supplied from one of the two gate signal lines GL that define the pixel region; a pixel electrode PIX that is provided in each pixel region and supplied, via the associated switching element, with a video

signal from one of the two drain signal lines DL that define the pixel region; an insulating film GI; a repair conductive layer RST formed so as to be contained in each of the plurality of drain signal lines DL when viewed perpendicularly and to be insulated from said each of the plurality of drain signal lines DL with the insulating film GI interposed in between (Fig. 4; paragraphs [0032],[0034]); and a light shield film IL so formed along at least one side of the repair conductive layer RST that the light shield film IL is insulated from the repair conductive layer RST, the drain signal line DL and the pixel electrode PIX, and that the light shield film IL is overlapped with the pixel electrode PIX along an extending direction of the drain signal line DL (Fig. 7; "*Electrical insulation can be attained by separating the light shield films IL from the associated repair conductive layers RST by a prescribed distance.*" [0070]).

The present invention, as now recited in claim 4, is also directed to a liquid crystal display device comprising: a liquid crystal; and two substrates opposed to each other with the liquid crystal interposed in between, the liquid crystal display device further comprising on a liquid-crystal-side surface of one of the two substrates: an insulating film; a plurality of gate signal lines formed at a position closer to the one substrate than the insulating film is; a plurality of drain signal lines that cross the plurality of gate signal lines and are formed at a position closer to the liquid crystal than the insulating film is; pixel regions each enclosed by two gate signal lines adjacent to each other and two drain signal lines adjacent to each other; a thin-film transistor that is provided in each pixel region and driven by a scanning signal supplied from one of the two gate signal lines that define the pixel region; a pixel electrode that is provided in each pixel region and supplied, via the associated thin-film transistor, with a video signal from one of the two drain signal lines that define the pixel region; a repair conductive layer formed at a position closer to the one substrate than the insulating film is so as to be contained in each of the plurality of drain signal lines when viewed perpendicularly and to be insulated from said each of the plurality of drain signal lines with the insulating film interposed in between; and a light shield film IL so formed along at least one side of the repair conductive layer RST that the light shield film IL is insulated from the repair conductive layer RST, the drain signal line DL and the pixel electrode PIX, and that the light shield film IL is overlapped with the pixel electrode PIX along an extending direction of the drain signal line DL.

The present invention, as now recited in claim 6, is also directed to a liquid crystal display device comprising: a liquid crystal; and two substrates opposed to each other with the

liquid crystal interposed in between, the liquid crystal display device further comprising on a liquid-crystal-side surface of one of the two substrates: an insulating film; a plurality of gate signal lines formed at a position closer to the one substrate than the insulating film is; a plurality of drain signal lines that cross the plurality of gate signal lines and are formed at a position closer to the liquid crystal than the insulating film is; pixel regions each enclosed by two gate signal lines adjacent to each other and two drain signal lines adjacent to each other; a thin-film transistor that is provided in each pixel region and driven by a scanning signal supplied from one of the two gate signal lines that define the pixel region; a pixel electrode that is provided in each pixel region and supplied, via the associated thin-film transistor, with a video signal from one of the two drain signal lines that define the pixel region; a repair conductive layer formed at a position closer to the one substrate than the insulating film so as to be contained in each of the plurality of drain signal lines when viewed perpendicularly and to be insulated from said each of the plurality of drain signal lines with the insulating film interposed in between; and a light shield film IL so formed along at least one side of the repair conductive layer RST that the light shield film IL is insulated from the repair conductive layer RST, the drain signal line DL and the pixel electrode PIX, and that the light shield film IL is overlapped with the pixel electrode PIX along an extending direction of the drain signal line DL. At least one of the plurality of drain signal lines has a disconnected portion and melt-formed portions that are located on both sides of the disconnected portion and penetrate the insulating film.

The present invention, as now recited in claim 11, is also directed to the liquid crystal display device recited in claim 1. In particular, the repair conductive layer RST is formed along each of the plurality of drain signal lines DL so as to be overlapped with said each of the plurality of drain signal lines DL when viewed perpendicularly and to be insulated from said each of the plurality of drain signal lines DL with the insulating film interposed in between.

The repair conductive layer RST is insulated from a respective drain signal line DL with the insulating film GI interposed in between. Only when a disconnection occurs in a drain signal line, laser light is then applied to two locations of the disconnected drain signal line on both sides of the disconnected portion to re-connect the parts of the drain signal line on both side of the disconnected portion via the repair conductive film. This is done by only two applications of laser light (Fig. 6; paragraphs [0014], [0060], [0061]). Since each repair conductive layer is formed so as to be contained in the associated drain signal line when

viewed perpendicularly, it does not prevent increase of the pixel aperture ratio (paragraphs [0015], [0062]).

In Fig. 7A, the light shield films IL are formed on both sides on both sides of each repair conductive layer RST. Like the black matrix BM formed on the transparent substrate SUB2, the light shield films IL has a light shield function. The light shield films IL makes decrease the width of the black matrix BM thereby increasing the aperture ratio ([0070]).

Applicants respectfully contend that none of the cited prior art references teaches or suggests such "a light shield film IL so formed along at least one side of the repair conductive layer RST that the light shield film IL is insulated from the repair conductive layer RST, the drain signal line DL and the pixel electrode PIX, and that the light shield film IL is overlapped with the pixel electrode PIX along an extending direction of the drain signal line DL" according to the invention.

In contrast, Ukai only has repair conductor layer segments 41 of aluminum (col. 4, lines 10-12) deposited next to the alleged repair conductive layer 46. The repair conductor layer segments 41 are insulated from the repair conductive layer 46, the drain signal line 19 and the pixel electrode 15 in Figs. 7-9, but NOT overlapped with the pixel electrode 15 along an extending direction of the drain signal line 19.

Among the concurrently filed IDS references, US Pat. No. 6429909 to Kim (hereinafter "Kim"), JP2000-292803 (hereinafter "JP'803") and US Pat. No. 6476882 to Sakurai (hereinafter "Sakurai") disclose repairing technologies. However, Kim, JP '803 and Sakurai do not disclose such a light shield film of the invention. For example, Kim only provides a repair line 120 for repairing of a data line 400 (Figs. 6-7), but not any light shield film IL so formed along at least one side of the repair line 120 that being insulated from the repair line 120, the data line 400 and the pixel electrode 600, and that being overlapped with the pixel electrode 600 along an extending direction of the data line 400.

US Pat. No. 5561440 to Kitajima (hereinafter "Kitajima") neither discloses such a light shield film of the invention. Kitajima only has signal lines 100A, 100B, a display electrode 54, and opaque materials 51, 52 overlapped with the display electrode 54 (Figs. 8-9; cols. 6-7). As Kim does provide any repair conductive layer, Kim's opaque materials 51, 52 are not formed along at least one side of any repair conductive layer RST and insulated from the repair conductive layer RST.

Applicants contend that one skilled in the art would not be motivated to combine Kitajima's opaque materials 51, 52 into Kim. Since Kim's repair line 120 being wide enough

to overlap with the transparent pixel electrode 600 (Figs. 6-7) thereby shielding light, it will be redundant to introduce any additional light shield film, such as Kitajima's opaque materials 51, 52 into Kim.

Applicants contend that neither Ukai nor the concurrently submitted IDS references teaches or discloses each and every feature of the present invention as disclosed in independent claims 1, 4, 6 and 11. As such, the present invention as now claimed is distinguishable and thereby allowable over the rejections raised in the Office Action. The withdrawal of the outstanding prior art rejections is in order, and is respectfully solicited.

Conclusion

In view of all the above, clear and distinct differences as discussed exist between the present invention as now claimed and the prior art reference upon which the rejections in the Office Action rely, Applicants respectfully contend that the prior art references cannot anticipate the present invention or render the present invention obvious. Rather, the present invention as a whole is distinguishable, and thereby allowable over the prior art.

Favorable reconsideration of this application is respectfully solicited. Should there be any outstanding issues requiring discussion that would further the prosecution and allowance of the above-captioned application, the Examiner is invited to contact the Applicants' undersigned representative at the address and phone number indicated below.

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